

Electronic relative and differential pressure switch type 616

Pressure range
0 ... 0.1 – 25 bar

The switching points of the pressure switch type 616 can be potentiometer adjusted by the customer, or set in our factory. Many different pressure and electrical connections offer a wide range of uses.

- Ideal for frequent switching cycles
- Long service life and long term stability due to lack of moving parts (unlike mechanical pressure switches)
- Very low susceptibility to temperature
- Modular system for easy implementation of individual applications



Technical overview

Pressure range

Relative and differential 0 ... 0.1 – 25 bar

Operating conditions

Medium		Liquids and neutral gases
Temperature	Medium / ambient	-15 ... +85 °C
	Storage	-40 ... +85 °C
Tolerable overload on one side		See order code selection table
System pressure	≤ 6 bar	25 bar
	> 6 bar	50 bar
Repture pressure		1.5x system pressure

Materials

Case		Stainless steel 1.4305 / AISI 303
Materials in contact with the medium	Pressure connection	Stainless steel 1.4305 / AISI 303
	Sensor	PVDF, CuZn nickel plated
	Sealing material	Ceramik Al ₂ O ₃ (96%)
		FPM, EPDM, NBR, MVQ

Electrical overview

Output	Open collector switch output for max. 100 mA at maximum supply voltage. NPN/PNP.	
Power supply	10 ... 33 VDC	24 VAC ± 15 %
Current consumption (at nominal pressure)	2 wire	< 20 mA
	3 wire	< 5 mA
Polarity reversal protection	Short circuit proof and protected against polarity reversal. Each connection against other with max. supply voltage.	

Dynamic response

Response time	< 5 ms
Load cycle	< 50 Hz

Protection standard

IP 65

Accuracy of switching point adjustments

< 1% fs

Calibration of switching points (Please state on order)

The upper and lower switching point can be freely selected between 5 and 100 % fs.

Recommendation spacing between upper and lower switching points: > 2 % fs (factory-set at 5 and 100 % unless switching point is specified).

Electrical Connection

Connector DIN EN 175301-803-A

Connector DIN EN 60130-9

Cable 1.5 m PG7

Pressure connection

Pressure tube tip	Ø 4 mm
	Ø 6 mm
Screw fitting	Ø 6 mm
	Ø 8 mm
Outside thread	7/16"-20 UNF
	G 1/8
Inside thread	1/8"-27 NPT
	G 1/8

Mounting instruction

Installation arrangement	Unrestricted
Mounting	Mounting bracket

Tests / Admissions

Electromagnetic compatibility CE conformity acc. EN 61326-2-3

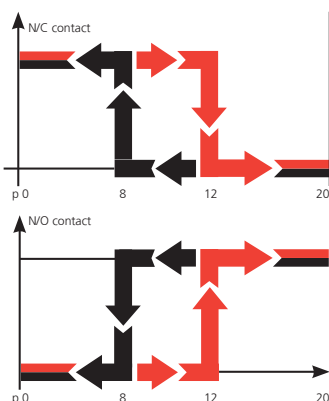
Weight

~ 430 g

Packaging

Single packaging in cardboard accessories included

Function



N/C contact: When pressure is applied ($p_0 \rightarrow p_{max}$) the switch will disconnect the applied load as soon as the upper switching point is reached. As the pressure falls ($p_{max} \rightarrow p_0$) the switch will connect the load as soon as the lower switching point is reached.

N/O contact: When pressure is applied ($p_0 \rightarrow p_{max}$) the switch will connect the applied load as soon as the upper switching point is reached. With a fall in pressure ($p_{max} \rightarrow p_0$) the switch will disconnect the load as soon as the lower switching point is reached.

Example: p_n 20 bar
 Upper switching point 12 bar
 Lower switching point 8 bar
 max. switch last 100 mA

Accuracy

Parameter	Unit	Versions with overload on one side ≤ 2x nominal pressure	Versions with overload on one side ≤ 3x nominal pressure	Versions with overload on one side ≤ 7.5x nominal pressure
Tolerance zero point	max. % fs	± 0.4	± 0.75	± 1.25
Tolerance full scale	max. % fs	± 0.4	± 0.75	± 1.25
Resolution	% fs	0.1	0.15	0.25
Total of linearity, hysteresis and repeatability	max. % fs	± 0.5	± 0.75	± 1.25
Long term stability acc. to DIN EN 60770	% fs	± 0.5	± 0.5	± 0.5
TC zero point ¹⁾	max. % fs/10K	See order code selection table	See order code selection table	See order code selection table
TC sensitivity ¹⁾	max. % fs/10K	± 0.15	± 0.23	± 0.38

Test conditions: 25 °C, 45% RH, Power supply 24 VDC
TC z.p. / TC s. -15 ... +80 °C

Order Code Selection Table

616. 9 X X X X X X X X X X

Pressure range ²⁾	Tolerable overload on one side	TC z.p. (fs/10K)								
	P 1	P2								
0 ... + 0.1 bar	max. 0.6 bar (6 x Nominal pressure)	0.6 bar ± 1.2 %	0	0						
0 ... + 0.2 bar	max. 1.2 bar (6 x Nominal pressure)	1.2 bar ± 1.2 %	0	2						
0 ... + 0.2 bar	max. 0.6 bar (3 x Nominal pressure)	0.6 bar ± 0.6 %	4	0						
0 ... + 0.25 bar	max. 1.2 bar (4.8 x Nominal pressure)	1.2 bar ± 1.0 %	0	3						
0 ... + 0.25 bar	max. 0.6 bar (2.4 x Nominal pressure)	0.6 bar ± 0.5 %	4	1						
0 ... + 0.3 bar	max. 0.6 bar (2 x Nominal pressure)	0.6 bar ± 0.4 %	0	1						
0 ... + 0.4 bar	max. 1.2 bar (3 x Nominal pressure)	1.2 bar ± 0.6 %	0	4						
0 ... + 0.4 bar	max. 2 bar (5 x Nominal pressure)	2 bar ± 1.0 %	0	5						
0 ... + 0.5 bar	max. 1.2 bar (2.4 x Nominal pressure)	1.2 bar ± 0.5 %	0	6						
0 ... + 0.5 bar	max. 3 bar (6 x Nominal pressure)	3 bar ± 0.8 %	0	7						
0 ... + 0.6 bar	max. 1.2 bar (2 x Nominal pressure)	1.2 bar ± 0.4 %	0	8						
0 ... + 0.6 bar	max. 3 bar (5 x Nominal pressure)	3 bar ± 0.7 %	0	9						
0 ... + 1 bar	max. 2 bar (2 x Nominal pressure)	2 bar ± 0.4 %	1	1						
0 ... + 1 bar	max. 5 bar (5 x Nominal pressure)	5 bar ± 1.0 %	1	2						
0 ... + 1.6 bar	max. 3.2 bar (2 x Nominal pressure)	3.2 bar ± 0.4 %	1	3						
0 ... + 1.6 bar	max. 12 bar (7.5 x Nominal pressure)	12 bar ± 1.0 %	1	4						
0 ... + 2.5 bar	max. 5 bar (2 x Nominal pressure)	5 bar ± 0.4 %	1	5						
0 ... + 2.5 bar	max. 12 bar (4.8 x Nominal pressure)	12 bar ± 0.6 %	1	6						
0 ... + 4 bar	max. 8 bar (2 x Nominal pressure)	8 bar ± 0.4 %	1	7						
0 ... + 4 bar	max. 12 bar (3 x Nominal pressure)	12 bar ± 0.5 %	1	8						
0 ... + 6 bar	max. 12 bar (2 x Nominal pressure)	12 bar ± 0.4 %	1	9						
0 ... + 10 bar	max. 20 bar (2 x Nominal pressure)	20 bar ± 0.4 %	3	0						
0 ... + 16 bar	max. 32 bar (2 x Nominal pressure)	32 bar ± 0.4 %	3	1						
0 ... + 25 bar	max. 50 bar (2 x Nominal pressure)	50 bar ± 0.4 %	3	2						
▲ Full scale signal at these pressure										
Sealing material	FPM	Fluoro elastomer							0	
	EPDM	Ethylene propylene							1	
	NBR	Butadiene Acrylonitrile							2	
	MVQ	Silicone-elastomer							3	
Calibration of switching points	Factory set								0	W
	Not factory set								1	
Switch contact	Contact N/O	NPN non-floating							0	
	Contact N/C	NPN non-floating							1	
	Contact N/O	PNP non-floating							2	
	Contact N/C	PNP non-floating							3	
Electrical connection ³⁾	Cable 1.5 m PG7								0	
	Connection DIN EN 175301-803-A								1	
	Connector DIN EN 60130-9								3	
Pressure connection	without connections	(¼ -27 NPT / PVDF G ¼)	(adjustable version only)						0	
	Pressure tube tip	CuZn nickel plated	for tube Ø 4 mm						1	
	Pressure tube tip	CuZn nickel plated	for tube Ø 6 mm						2	
	Pressure tube tip	PVDF	for tube Ø 6 mm						3	2
	Screw fitting	CuZn nickel plated	for pipe Ø 6 mm						4	
	Screw fitting	Inox 1.4305	for pipe Ø 6 mm						5	
	Screw fitting	CuZn nickel plated	for pipe Ø 8 mm						6	
	Screw fitting	Inox 1.4305	for pipe Ø 8 mm						7	
	Screw tip	PVDF	for pipe Ø 6 mm						8	2
	Screw tip	PVDF	for pipe Ø 8 mm						9	2
	Outside thread	7/16-20 UNF, CuZn nickel plated							A	
	Adapter	G ¼ inside	for pipe Ø 6 mm						B	
	Adapter	G ¼ outside with union nut	for pipe Ø 6 mm						C	
Case in contact with medium	Inox 1.4305 with pressure tip orifice									1
	PVDF (all ranges up to 6 bar max, overload and system pressure 12 bar max.)									2
	2 pressure tip orifice (Inox only)									4
Calibration	Indicate W and state range on order (e.g.: 12/10bar)									W

Accessories

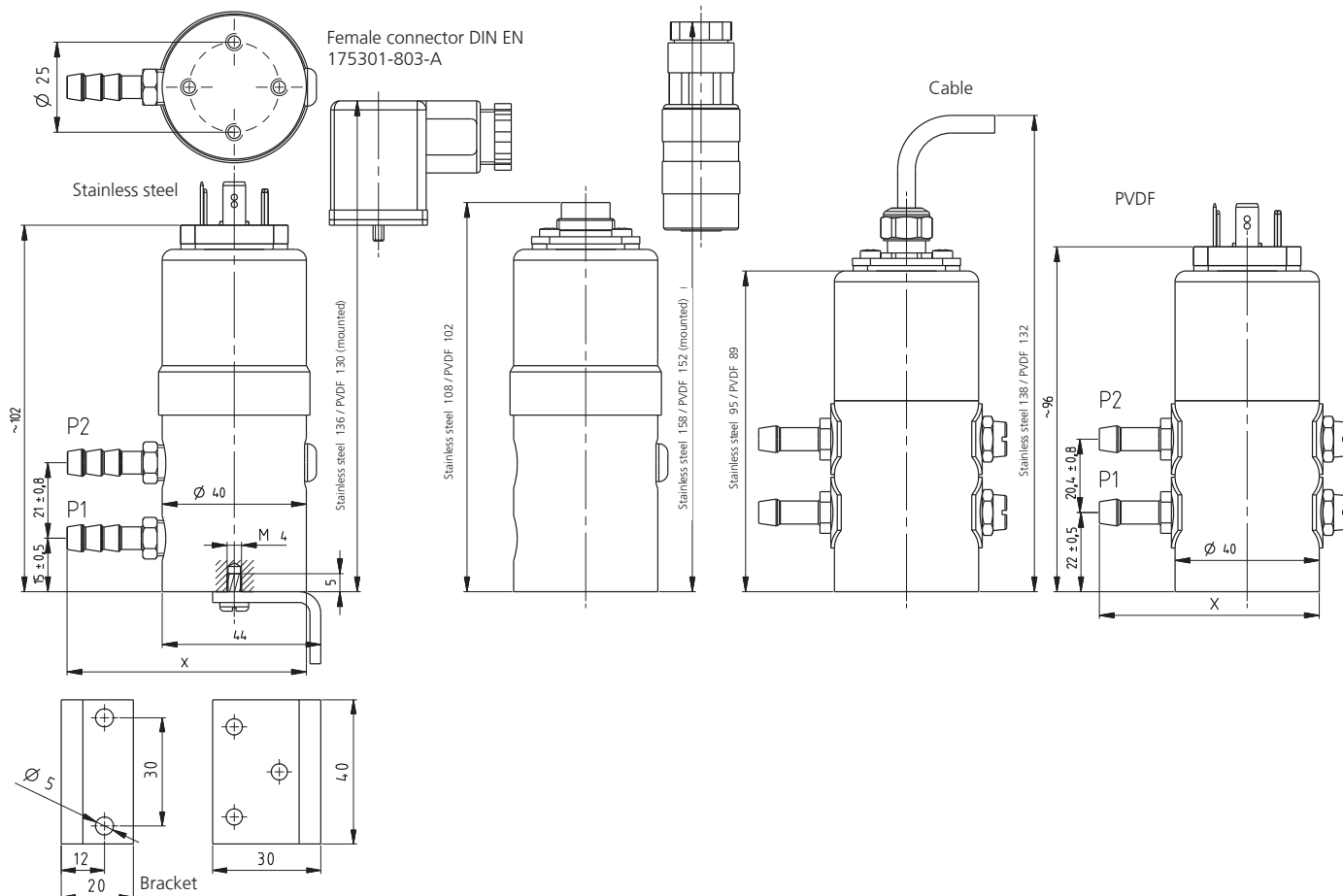
			Order number
Female connector	DIN EN 175301-803-A	IP 65, when installed and screwed	103510
Female connector	DIN EN 60130-9	IP 65, when installed and screwed	103524
Mounting bracket			101999
Calibration certificate			104551

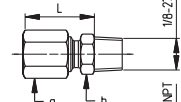
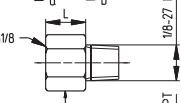
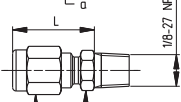

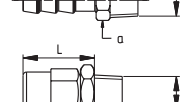
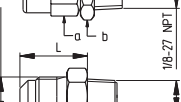
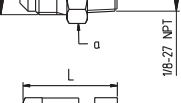

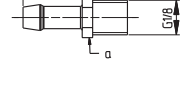


¹⁾ TC = Temperature-coefficient

²⁾ Other pressure range on request

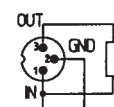
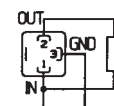
³⁾ Without female connection

Connector
DIN EN 60130-9

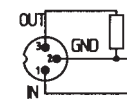
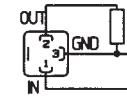
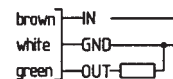


	Stainless steel 1.4305	Screw fitting for pipe outside Ø 6	L~24	a=10
	AISI 303	Screw fitting for pipe outside Ø 8	X~65	b=12
	Stainless steel 1.4305	Inside thread G 1/8	L~12	a=14
	AISI 303		X~53	
	CuZn vni	Screw fitting for pipe outside Ø 6	L~24	a=10
		Screw fitting for pipe outside Ø 8	X~65	b=12
	CuZn vni	Screw fitting for pipe outside Ø 6	L~25	a=12
		Screw fitting for pipe outside Ø 8	X~66	b=14
	CuZn vni Stainless Steel 1.4571 AISI 316Ti	Hose connection for tube Ø 4	L~20	a=10
		Hose connection for tube Ø 6	X~61	
	CuZn vni	Hose connection for tube Ø 6	L~25	a=10
			X~66	
	CuZn vni	Outside thread G 1/8	L~20	a=10
			X~61	b=12
	CuZn vni	Outside thread 7/16-20 UNF	L~18	a=14
			X~59	
	PVDF	Screw fitting for pipe Ø 6	L~20	a=12
		Screw fitting for pipe Ø 8	X~61	b=12
	PVDF	Screw fitting for pipe Ø 8	L~23	a=14
			X~64	
	PVDF	Hose connection for tube Ø 6	L~20	a=10
			X~61	

NPN



PNP





FOR FINE PRESSURE AND FLOW MEASUREMENT

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